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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/741,639	12/20/2000	Vlad Mitlin	3Com-72/2	5631

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EXAMINER

BAYARD, EMMANUEL

ART UNIT PAPER NUMBER

2631

DATE MAILED: 03/19/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/741,639

Applicant(s)

MITLIN ET AL.

Examiner

Emmanuel Bayard

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 October 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-55 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10, 13-16, 25, 34 and 49 is/are allowed.
- 6) ☒ Claim(s) 1, 4-8, 11, 12, 17, 18, 20-24, 26-32, 35, 36, 41, 42, 44-48 and 50-55 is/are rejected.
- 7) ☒ Claim(s) 2, 3, 9, 19, 33, 37-40 and 43 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4-7.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because it should be limited to a single paragraph. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 4-8 and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Liang et al U.S. Patent No 6,445,773 B1.

As per claim 1, Liang et al discloses a method of determining data flow for a channel having a plurality of sub-channels in a multi-carrier system, comprising: determining data rate is the same as the claimed (data flow) (see col.1, lines 20-25 and col.3, lines 55-58) for the channel in terms of an input intensity L_m , and a probability of having a frame having no or a correctable number of errors p ; and adjusting channel performance (see col.1, lines 55-60 and col.5, lines 33-54) in accordance with the data rate (data flow).

As per claims 4, 8, 32 Liang et al discloses method of determining data flow for a channel having a plurality of sub-channels in a multi-carrier system, comprising: determining an upstream (see col.1, lines 20-60 and col.5, lines 33-54) data rate is the same as the claimed (data flow); determining a downstream (see col.1, lines 20-60 and col.5, lines 33-54) data rate is the

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same as the claimed (data flow); and superimposing the upstream data flow and the downstream data flow to determine a (see col.1, lines 20-60 and col.5, lines 33-54) data rate is the same as the claimed (data flow).

As per claim 5, the method of Liang inherently includes wherein the channel uses forward error correction.

As per claim 6, the method of Liang inherently includes wherein the upstream data flow comprises retransmitting data.

As per claim 7, the method of Liang inherently includes wherein the downstream data flow comprises retransmitting data.

4. Claims 11-12, 17-18, 20-24, 26-31, 35-36, 41-42, 44-48, 50-55 are rejected under 35 U.S.C. 102(e) as being anticipated by Levin et al U.S. Patent No 6,625,777 B1.

As per claims 11, 18, 35, 42, Levin et al discloses method of increasing a bit load of a multi-carrier system comprising a channel having a plurality of sub-channels, comprising: determining a bit load (see col.2, lines 32-40 and col.5, lines 45-67 and col.6, lines 1-67 and col.9, lines 1-67) for at least one sub-channel based on a target symbol error rate, a maximum number of symbol errors that can be corrected t , a number of symbols in an information field K , and a maximum number of transmissions k , and a number of bits per sub-channel; and selecting the maximum number of symbol errors t , the number of symbols in the information field K and the maximum number of transmissions k , such that a coding gain is increased (see col.3, lines 15-21 and col.5, lines 28-53 and col.10, lines 10-67 and col.12, lines 48-55).

As per claims 12, 36, Levin does include wherein the coding gain is a function of an average number of transmissions for a frame (see col.7, lines 18-35).

As per claims 17, 41, Levin inherently includes method of claim 11 further comprising determining a total increase in the number of bits to be sent in a DMT symbol ($G, (t, K, k)$) in accordance with the following relationship: $G_d(t, K, k) = \text{BDMT}(t, K, k) - \text{BD}_{\dots}(O, K, l)$.

As per claims 20, 44, Levin et al discloses a method of selecting transmission parameters a multicarrier system having a channel comprising a plurality of sub-channels, comprising: selecting a number (s) of discrete multi-tone symbols (see col.1, lines 38-67 and col.3, lines 15-22 and col.5, lines 28-67 and col.6, lines 1-67 and col.7, lines 21-67 and col.10, lines 11-67 and col.12, lines 48-67 and col.14, lines 37-40) in a forward-error-correction frame, a number (z) of forward-error-correction control symbols in a discrete multi-tone symbol, and a maximum number of transmissions (k), based on a signal-to-noise ratio and a number of sub-channels associated with the signal-to-noise ratio; and transmitting information (see col.1, lines 30-34 and col.3, lines 58-60 and col.5, lines 31-37) in accordance with the selected number (s) of discrete multi-tone symbols, the number (z) of forward-error-correction control symbols in the discrete multi-tone symbol and the maximum number of transmissions (k).

As per claims 21, 45 Levin et al does include wherein said selecting comprises selecting an adjustment value per sub-channel based on the signal-to-noise ratio and the number of sub-channels associated with the signal-to-noise ratio (see col.3, lines 15-21 and col.5, lines 55-59 and col.6, lines 1-3); and adjusting a number of bits per sub-channel for at least one sub-channel in accordance with the adjustment value (see col.3, lines 15-21 and col.5, lines 55-59 and col.6, lines 1-67).

As per claims 22, 46 Levin et al does include wherein the signal-to-noise ratio is an average signal-to-noise ratio of the associated number of sub-channels (see col.7, lines 40-55).

As per claims 23, 47 Levin et al does include storing (see col.15, lines 60-61), in a table, the number (s) of discrete multi-tone symbols in the forward-error-correction frame, the number (z) of forward-error-correction control symbols in the discrete multi-tone symbol associated with the signal-to-noise ratio, the maximum number of transmissions (k) and the number of sub-channels associated with the signal-to-noise ratio, for different values of s, z, signal-to-noise ratios and numbers of sub-channels.

As per claims 24, 48 Levin et al does include wherein for each value of signal-to-noise ratio and a number of bits per sub-channel of the table, the associated values of s, z and k are also 3 associated with an adjustment value that provides a maximal net coding gain g_{net} , such that the associated values of s, z and k is selected from a subset of associated s, z and 5 k values (see col.3, lines 15-21 and col.5, lines 55-59 and col.6, lines 1-67).

As per claims 26 and 50, Levin et al discloses a method for transmitting data in a multi-carrier system between a downstream station and an upstream station, coupled by a channel having a plurality of sub-channels, comprising: transmitting an information frame from the upstream station (see fig.1 element 42 and col.1, lines 47-52 and col.5, lines 34-35); receiving the information frame at the downstream station (see fig.1 element 34 and col.5, lines 33-35); determining whether the information frame is non-correctable (see col5, lines 43-67; transmitting a negative acknowledgement when the information frame is non-correctable (see col.11, lines 46-59); and transmitting the information frame (see col.11, lines 46-59) if the information frame has not be transmitted a predetermined number of times from the upstream station.

As per claims 27 and 51, Levin et al does include wherein the predetermined number of times is determined in accordance with a measured signal-to-noise ratio value representing at

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least a subset of the sub-channels of the channel (see col.6, lines 2-3 and col.14, lines 19-30) and forward error correction parameters (see col.14, lines 36-37).

As per claims 28 and 52, Levin et al does include wherein the multi-carrier system is a discrete multi-tone system (see col.1, line 31).

As per claims 29 and 53, Levin et al does include wherein the discrete multi-tone system comprises the G-lite standard (see col.15, line 11)

As per claims 30 and 54 Levin et al inherently includes wherein the discrete multi-tone system comprises the G.dmt standard.

As per claims 31 an 55, Levin et al wherein the forward error correction parameters are Reed-Solomon (see col.2, line 5) forward error correction parameters.

Allowable Subject Matter

5. Claims 2-3, 9, 19, 33, 37-40, 43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Claims 10, 13-16, 25, 34, 49 are allowed.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Voith et al U.S. patent No 5,751,741 teaches rate-adapted communication.

Ramswamy et al U.S. Patent N 6,574,769 B1 teaches enhanced range/graceful degradation.

Locke et al U.S. Patent No 6,598,188 B1 teaches an error corrected codeword.

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Iglesia et al PUB No US 2003/0066005 A1 teaches a bus power.

Chow U.S. patent nO 6,249,543 teaches a protocol for transceiver.

Herzberg U.S. patent NO 6,459,678 B1 teaches a system and method for providing near optimal bit loading.

Linz et al U.S. Patent No 6,611,564 teaches a method for conserving power.

Kahkosha et al U.S patent No 6,002,671 teaches a test instrument.

Moskovich et al U.S. patent No 6,441,931 B1 teaches a method and apparatus for monitoring a dedicated communications.

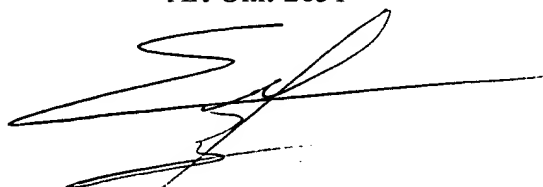
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel Bayard whose telephone number is 703 308-9573.

The examiner can normally be reached on Monday-Friday (7:Am-4:30PM) Alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammed Ghayour can be reached on 703 306-3034. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Emmanuel Bayard
Primary Examiner
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Wednesday, March 17, 2004